

## Missouri Department of Natural Resources

# Total Maximum Daily Load Information Sheet

## Table Rock Lake

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### Waterbody Segment at a Glance:

|                            |                                    |
|----------------------------|------------------------------------|
| <b>Counties:</b>           | Barry, Stone and<br>Taney Counties |
| <b>Nearby Cities:</b>      | Kimberling City, Branson           |
| <b>Size of Impairment:</b> | 43,100 acres                       |
| <b>Pollutant:</b>          | Nutrients                          |
| <b>Sources:</b>            | Point and Nonpoint sources         |



**TMDL Priority Tanking:** Low

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### Description of the Problem

#### Beneficial Uses of Table Rock Lake

- Livestock and Wildlife Watering
- Protection of Warm Water Aquatic Life
- Protection of Human Health associated with Fish Consumption
- Whole Body Contact Recreation (swimming)
- Boating and Canoeing

#### Use that is impaired

- Whole Body Contact Recreation (swimming)

#### Standards that apply

- All waterbodies in Missouri are protected by the *general* criteria (standards) contained in Missouri's WQS, 10 CSR20-7.031(3). These criteria (also called *narrative* criteria) list substances that all waters "shall be free from". For example, sections (3)(A) and (3)(C) state:
  - Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses.
  - Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses.

### Background Information and Water Quality Data

Table Rock Lake is an exceptional water resource. It provides unequalled recreational and economic opportunities for Missouri's citizens. It is nationally known for its excellent fishing.

It also provides magnificent scenery due to its location in the Ozark Mountains. Table Rock Lake is the centerpiece for a wide variety of tourist attractions, with its watershed producing over a billion dollars in tourism revenue each year.

Table Rock Lake was added to the 2002 303(d) list of impaired waters due to nutrients from point and nonpoint sources. In recent years, concern had been growing due to reduced water clarity in the lake. The problem with clarity is caused by increased amounts of nitrogen and phosphorus entering the lake. Nitrogen and phosphorus are plant nutrients, which can cause excessive growth of algae. Phosphorus has been identified as the chief cause for the increase in algae, which impart a green color to the water and reduce water clarity. This is particularly true in the James River arm of the lake, which receives heavy loads of phosphorus from urban stormwater, wastewater treatment plants and nonpoint sources. Increasing resident populations in southwest Missouri, the large number of tourists visiting the area, commercial and industrial development and livestock production have all contributed to the increased nutrient loading throughout the lake. Most growth is occurring in areas without municipal sewage treatment. Runoff continues to be a significant problem. Increased nutrients and fecal coliform from ineffective septic tanks and improper farming practices have increased health concerns, reduced water clarity and promoted algae growth. This rapid growth in population, and commercial development, as well as an historic realignment in the agriculture industry, has not been accompanied by comparable improvements in effective wastewater treatment and run-off control. Some communities have made notable and significant investments to reduce pollution reaching the White River and its tributaries. Others are preparing to do so in the near future.

A Total Maximum Daily Load (TMDL) was completed on the James River in 2001 for phosphorus and nitrogen. This TMDL addresses the algal growth in the James River, which is directly related to the decreasing water clarity in Table Rock Lake. The TMDL calculated the reductions in nutrient loading needed to control algal growth. A phosphorus limit of 0.5 mg/L (milligrams per liter or parts per million) has been established for all discharges into the Missouri portion of the Table Rock Lake basin equal to or greater than 22,500 gallons per day. The largest point source in the basin, the Springfield Southwest Treatment Plant, initiated phosphorus removal from its discharge in March 2001 and has been achieving results much lower than the 0.5 mg/L limit. As reported by the Missouri Lakes Voluntary Program in 2003, Table Rock Lake is already responding with greater water clarity directly connected to the decrease in phosphorus output from the Wastewater Treatment Plant<sup>1</sup>.

Besides the James River TMDL, there are many other efforts occurring in the Table Rock Lake watershed to help improve the lake. There are two flourishing watershed groups devoted to Table Rock Lake and the White River Basin. They are the Table Rock Lake Water Quality, Inc., formed in December 1998, and the Upper White River Basin Foundation, started in 2002. These groups have instigated many studies, gotten ordinances passed and encouraged innovative best management practices around the lake. Some of their on-going goals are:

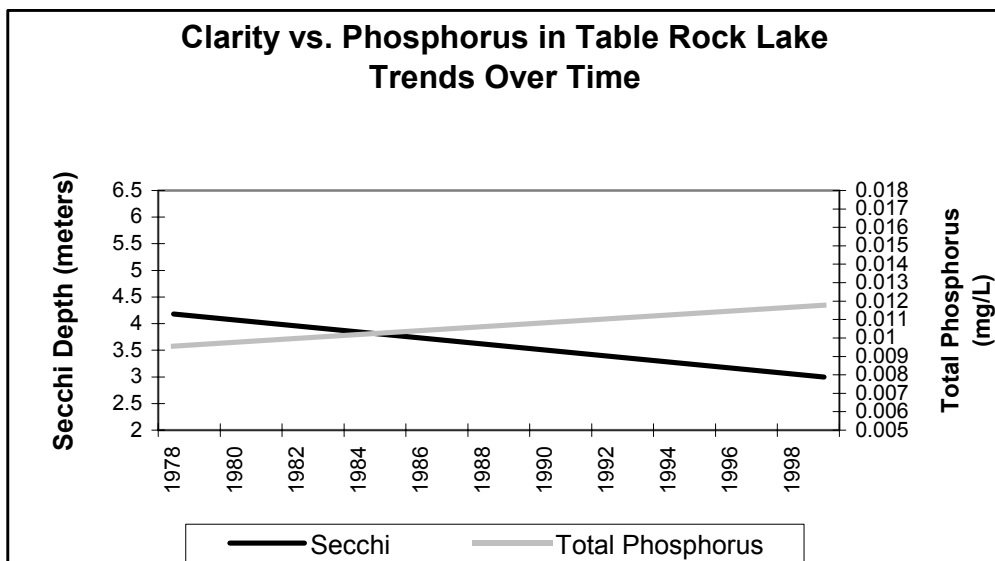
- Improved monitoring of water quality in the basin
- Improved municipal sewage treatment
- Adoption of improved on-site wastewater treatment systems
- Reduction of nutrient run-off

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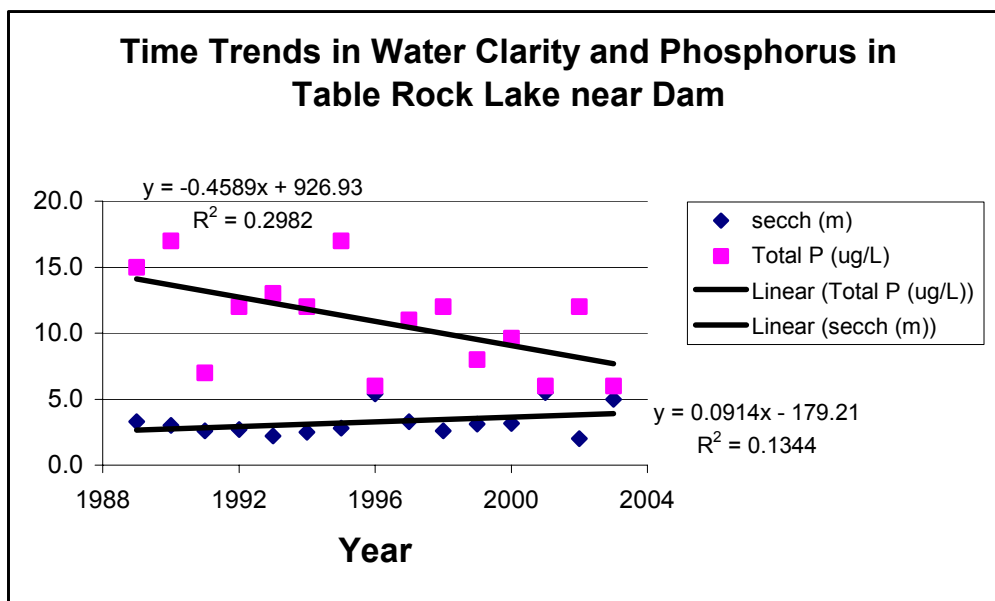
<sup>1</sup> Data poster available on request. Also visit [www.lmvp.org](http://www.lmvp.org)

One continuing concern is that increased phosphorus levels will continue to be a problem in the lake, even after nutrient loading is reduced. This is because phosphorus attaches to soil particles, which are washed into streams by erosion. Table Rock Lake acts as a “sink” as the sediment load coming from its tributaries settles on the bottom of the lake. Phosphorus will continue to be released from this sediment for an unknown period of time.

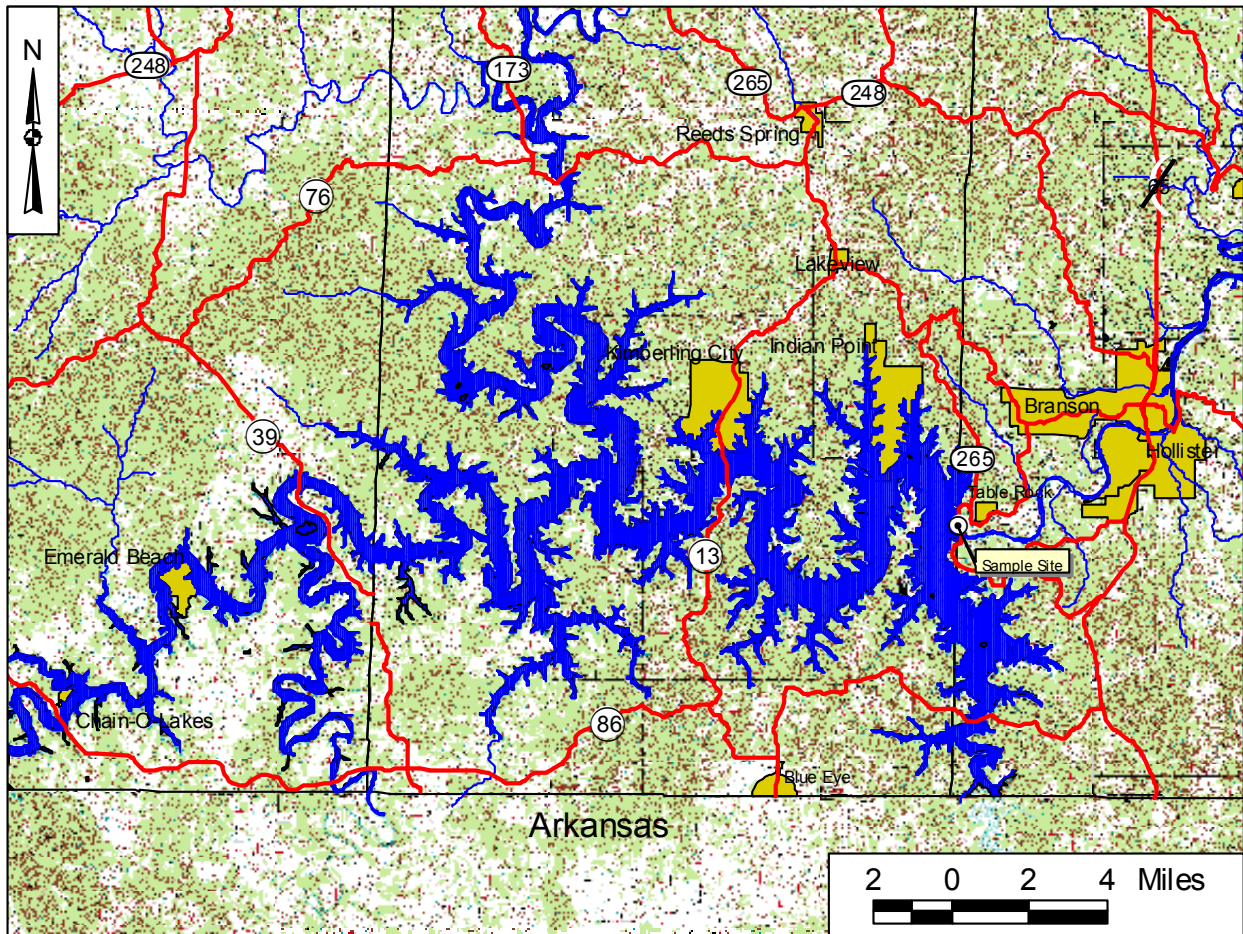
A map of Table Rock Lake and graphs of the data may be found below. The graphs show the distinct relationship between phosphorus and clarity: when phosphorus increases, clarity decreases; when phosphorus decreases, clarity increases.



Source: Dr. Jack Jones, Professor of Limnology, University of Missouri at Columbia



## Table Rock Lake in Southwestern Missouri



**For more information call or write:**

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